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10/759,113	01/20/2004	Tatsuhiro Fukuzawa	50195-412	6654

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McDERMOTT, WILL & EMERY
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Washington, DC 20005-3096

EXAMINER

CANTELMO, GREGG

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 12/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/759,113

Applicant(s)

FUKUZAWA ET AL.

Examiner

Gregg Cantelmo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 13-20 is/are rejected.
- 7) ☒ Claim(s) 6-12 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s).

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>SEE OFFICE ACTION</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statements filed January 20, 2004; July 13, 2005; September 28, 2006 and November 30, 2006 have been placed in the application file and the information referred to therein has been considered as to the merits.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "21" and "3" have both been used to designate the negative electrode in Fig. 5B. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The incorporation of essential material in the specification by reference to an unpublished U.S. application, foreign application or patent, or to a publication is improper. Applicant is required to amend the disclosure to include the material incorporated by reference, if the material is relied upon to overcome any objection, rejection, or other requirement imposed by the Office. The amendment must be accompanied by a statement executed by the applicant, or a practitioner representing the applicant, stating that the material being inserted is the material previously incorporated by reference and that the amendment contains no new matter. 37 CFR 1.57(f). See page 47, ll. 19-21.

Claim Objections

5. Claim 17 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 17 recites a plurality of the batteries of claim 1 are connected to constitute a battery module. Claims 1 and 17 are directed to the bipolar battery. Providing a plurality of the claimed batteries in a module while defining a further product using the battery of claim 1 does not further define the battery itself. Thus claim 17 fails to further define the bipolar battery itself.

6. Claim 18 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claims 1 and 18 are

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directed to the bipolar battery. Providing a plurality of the claimed batteries in a module while defining a use of the battery of claim 1 does not further define the battery itself.

Thus claim 18 fails to further define the bipolar battery itself.

Claim Rejections - 35 USC § 101

7. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 18 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process or features involved in the battery product, results in an improper definition of a process or product, i.e., results in a claim which is not a proper process claim or product claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 18 provides for the use of the bipolar battery, but, since the claim does not set forth any steps involved in the method/process/product, it is unclear what method/process/product applicant is intending to encompass. A claim is indefinite

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where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-5 and 17-20 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 59-128776 A (JP '776).

JP '776 discloses a bipolar battery and method of manufacturing the bipolar battery comprising: a plurality of bipolar electrodes 1; each of the plurality of bipolar electrodes being provided with: a current-collector; a positive electrode layer formed on one side of the current-collector; and a negative electrode layer formed on the other surface of the current-collector; electrolyte layers 3 formed between adjacent ones of the plurality of bipolar electrodes 1, respectively, so that the plurality of bipolar electrodes 1 are stacked in a stacking direction by interposing the electrolyte layers 3 between adjacent ones of the plurality of bipolar electrodes 1, respectively; sealing portions surrounding and sealing the electrolyte layers, respectively; and contributing members 8 contributing to keeping gaps between the adjacent ones of the plurality of bipolar electrodes (Fig. 5), the contributing members being disposed within areas of the sealing portions, respectively (Fig. 3). Note that the edge portion 6 of the electrolyte layer 3 is sealed (abstract and Fig. 3 as applied to claims 1 and 19-20).

The sealing portion 6 are located to surround the peripheries of the contributing members 8 along directions perpendicular to the stacking direction (Figs. 3 and 5 as applied to claim 2).

The contributing members 8 are spread between the adjacent bipolar electrodes 1 and the sealing portions 6 are disposed to fill the gaps between the between the bipolar electrodes 1 and the contributing members 8 within the sealing portion 6 (Figs. 2, 3 and 5 as applied to claim 3).

The contributing members 8 are discrete spacers (Figs 3 and 5) having heights in the stacking direction (Fig. 5) so as to spread between the adjacent ones of the plurality of bipolar electrodes 1 (Figs. 3 and 5 as applied to claim 4).

The spacers 8 have a width which is narrower than the width of the sealing portions 6 (Fig. 3 as applied to claim 5).

Claims 1 and 17 are directed to the bipolar battery. Providing a plurality of the claimed batteries in a module while defining a further product using the battery of claim 1 does not further define the battery itself. Thus claim 17 fails to further define the bipolar battery itself. In so far as claim 17 defines the individual bipolar battery, since claim 1 anticipates the claimed bipolar battery and since claim 17 fails to further define the claimed bipolar battery and since no patentable weight has been accorded to the battery module since it does not materially and further define the individual bipolar battery, JP '776 is held to still anticipate the bipolar battery of claim 17.

Claims 1 and 18 are directed to the bipolar battery. Providing a plurality of the claimed batteries in a module while defining a use of the battery of claim 1 does not

further define the battery itself. Thus claim 18 fails to further define the bipolar battery itself. In so far as claim 18 defines the individual bipolar battery, since claim 1 anticipates the claimed bipolar battery and since claim 18 fails to further define the claimed bipolar battery and since no patentable weight has been accorded to the use of the battery module since it does not materially and further define the individual bipolar battery, JP '776 is held to still anticipate the bipolar battery of claim 18.

10. Claims 1 and 17-20 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 11-121025 (JP '025)

JP '025 discloses a bipolar battery and method of manufacturing the bipolar battery comprising: a plurality of bipolar electrodes; each of the plurality of bipolar electrodes being provided with: a current-collector; a positive electrode layer formed on one side of the current-collector; and a negative electrode layer formed on the other surface of the current-collector; electrolyte layers formed between adjacent ones of the plurality of bipolar electrodes, respectively, so that the plurality of bipolar electrodes are stacked in a stacking direction by interposing the electrolyte layers between adjacent ones of the plurality of bipolar electrodes, respectively; sealing portions 4 surrounding and sealing the electrolyte layer contributing to keeping gaps between the adjacent ones of the plurality of bipolar electrodes (Fig. 2), the sealing members also serve as contributing members which cover the same area and thus is disposed in the same space (as applied to claims 1 and 19-20). Note that the claim does not preclude the sealing portion and contributing members being the same component, thus the seal of

JP '025 which also serves to maintain gaps between the plates serves as both a seal and contributing member as required in claims 1 and 19-20).

Claims 1 and 17 are directed to the bipolar battery. Providing a plurality of the claimed batteries in a module while defining a further product using the battery of claim 1 does not further define the battery itself. Thus claim 17 fails to further define the bipolar battery itself. In so far as claim 17 defines the individual bipolar battery, since claim 1 anticipates the claimed bipolar battery and since claim 17 fails to further define the claimed bipolar battery and since no patentable weight has been accorded to the battery module since it does not materially and further define the individual bipolar battery, JP '025 is held to still anticipate the bipolar battery of claim 17.

Claims 1 and 18 are directed to the bipolar battery. Providing a plurality of the claimed batteries in a module while defining a use of the battery of claim 1 does not further define the battery itself. Thus claim 18 fails to further define the bipolar battery itself. In so far as claim 18 defines the individual bipolar battery, since claim 1 anticipates the claimed bipolar battery and since claim 18 fails to further define the claimed bipolar battery and since no patentable weight has been accorded to the use of the battery module since it does not materially and further define the individual bipolar battery, JP '025 is held to still anticipate the bipolar battery of claim 18.

11. Claims 1, 13-14 and 16-20 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 08-007926 A (JP '926)

JP '926 discloses a bipolar battery and method of manufacturing the bipolar battery comprising: a plurality of bipolar electrodes; each of the plurality of bipolar

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electrodes being provided with: a current-collector; a positive electrode layer formed on one side of the current-collector; and a negative electrode layer formed on the other surface of the current-collector; electrolyte layers formed between adjacent ones of the plurality of bipolar electrodes, respectively, so that the plurality of bipolar electrodes are stacked in a stacking direction by interposing the electrolyte layers between adjacent ones of the plurality of bipolar electrodes, respectively; sealing portions 9 surrounding and sealing the electrolyte layer contributing to keeping gaps between the adjacent ones of the plurality of bipolar electrodes (Fig. 2), the sealing members also serve as contributing members which cover the same area and thus is disposed in the same space (as applied to claims 1 and 19-20). Note that the claim does not preclude the sealing portion and contributing members being the same component, thus the seal of JP '926 which also serves to maintain gaps between the plates serves as both a seal and contributing member as required in claims 1 and 19-20).

The battery includes a lithium-transition metal complex oxide as the positive active material and carbon or a lithium-transition metal complex oxide as the negative active material (paragraphs 7 and 8 as applied to claim 13).

The electrolyte includes separators impregnated with electrolytic solution or solid polymer electrolytes (paragraph 9 as applied to claims 14 and 16).

Claims 1 and 17 are directed to the bipolar battery. Providing a plurality of the claimed batteries in a module while defining a further product using the battery of claim 1 does not further define the battery itself. Thus claim 17 fails to further define the bipolar battery itself. In so far as claim 17 defines the individual bipolar battery, since

claim 1 anticipates the claimed bipolar battery and since claim 17 fails to further define the claimed bipolar battery and since no patentable weight has been accorded to the battery module since it does not materially and further define the individual bipolar battery, JP '926 is held to still anticipate the bipolar battery of claim 17.

Claims 1 and 18 are directed to the bipolar battery. Providing a plurality of the claimed batteries in a module while defining a use of the battery of claim 1 does not further define the battery itself. Thus claim 18 fails to further define the bipolar battery itself. In so far as claim 18 defines the individual bipolar battery, since claim 1 anticipates the claimed bipolar battery and since claim 18 fails to further define the claimed bipolar battery and since no patentable weight has been accorded to the use of the battery module since it does not materially and further define the individual bipolar battery, JP '926 is held to still anticipate the bipolar battery of claim 18.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

14. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

15. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP '926 in view of Linden "Handbook of Batteries" (hereafter referred to as Linden).

The teachings of JP '926 have been discussed above and are incorporated herein.

The difference between claim 15 and JP '926 is that JP '926 does not teach of the electrolyte layers including polymer gel electrolytes.

JP '926 is drawn to rechargeable lithium batteries employing a bipolar electrode arrangement. While JP '962 teaches of particular lithium electrolytes, the use of other lithium electrolytes including polymer gel electrolyte would have been known and obvious alternative electrolyte materials useful in lithium rechargeable batteries.

Linden discloses that electrolyte-impregnated separators, solid polymer electrodes and gelled polymer electrolytes are all known electrolyte materials used in lithium rechargeable batteries (pages 36.13-36.16 of Linden).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of JP '926 by using any of electrolyte-impregnated separators, solid polymer electrodes and gelled polymer electrolytes since they would have provided known electrolyte materials all of which exhibit good ionic conductivity, wide electrochemical voltage windows and interchangeable compatibility with the cell components. Furthermore gelled electrolytes provided improved immobilization of the electrolyte solution within the gelled matrix and reduce electrolyte leakage from the matrix. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945) See also *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP § 2144.07.

Allowable Subject Matter

16. Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

17. The following is a statement of reasons for the indication of allowable subject matter: none of the prior art of record appears to teach, suggest or render obvious the spacer arrangement of claim 6.

It is noted that while the corresponding international search report cites multiple X references to all of claims 1-19, a review of these references fail to clearly teach or suggest the arrangement of claim 6.

Claims 7-12 are dependent upon claim 6 and allowable for the same reasons.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is 571-272-1283. The examiner can normally be reached on Monday to Thursday, 8:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



gc
December 11, 2006

Gregg Cantelmo
Primary Examiner
Art Unit 1745